

IN THE CLAIMS

Please cancel Claims 1-8, without prejudice.

9. (original) An apparatus for object detection and ranging used by vehicle backing system, which includes:

a processor, which is connected to an alarm and a memory device, and is used for detecting objects and issuing a warning when there is obstruction;

a channel selector, which is controlled by the processor and is used to select the active sensor;

multiple power boosters, which are connected between the channel selector and the sensors in the sensor array for controlling the signal transmission by the above sensors; and

an A/D converter, which is connected between the channel selector and the processor, and is used to convert the received signal to a digital format for computation of relative distance;

whereby, the processor through the channel selector governs the sequence of transmission of a ranging signal by one of the sensors in accordance with a given sequence, and later the reception of echoed signals, by the same sequence, which are then converted by the A/D converter to a digital format for computation of relative distance.

10. (original) An apparatus for object detection and ranging used by vehicle backing system as claimed in claim 9, wherein the A/D converter is connected through a signal amplifier to the channel selector, and then further connected to the sensor array; whereby the signal received from the sensor array is amplified and passed to the comparator in the A/D converter circuit.

11. (original) An apparatus for object detection and ranging used by vehicle backing system as claimed in claim 9, wherein a latch is used to connect the I/O pins of the processor and the address pins of the memory device.

12. (original) An apparatus for object detection and ranging used by

vehicle backing system as claimed in claim 9, wherein the A/D converter includes:

a voltage doubling circuit whose inputs are respectively connected to the processor; and

a comparator where one input is connected to the output of the signal amplifier, the other input is connected to the output of the voltage doubling circuit, and the output is connected to the processor.

13. (original) An apparatus for object detection and ranging used by vehicle backing system as claimed in claim 12, wherein the signal amplifier is formed from multiple cascaded operational amplifiers.

14. (original) An apparatus for object detection and ranging used by vehicle backing system as claimed in claim 13, wherein the output from the first-stage operational amplifier in the signal amplification circuit is connected in series with a noise shielding circuit.

15. (original) An apparatus for object detection and ranging used by vehicle backing system as claimed in claim 9, wherein the alarm is implemented by a buzzer.